

FIG 1

Unit Conversion Calculator

26a → General Info

Length Conversion: 27 m to 88.5827 ft

Area Conversion: 35 m² to 3.25161 ft²

Volume Conversion: 15 galUS to 56.7812 L

Weight Conversion: 1 kg to 2.20462 lbm

Pressure Conversion: 70.3 kg/cm² to 1000 psi

Temperature Conversion: 72.5 degF to 22.5 degC

Density Conversion: 8.346 lbm/galUS to 1000.07 kg/m³

Velocity Conversion: 45 m/s to 100 ft/s

26b Coiled Tubing & Pipe Data

26c Volume

26d Fracturing


26e Cementing

26f Acid Oil Brine

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FIG 2 Results from Unit Conversion Calculator

Unit Conversion Calculator


Flow Rate Conversion 

102 62

gal US/min

to

m3/min

Power Conversion 

104 64

106 66

hp

to

W

108 68

28

Fig 2A

meter	3.281	feet
meter	39.3701	inches
meter	1.094	yards

$$1 \text{ m} = 3.281 \text{ ft}$$

$$\therefore 27 \text{ m} = 27 \times 3.281 \frac{\text{ft}}{\text{m}} = 88.5827 \text{ ft}$$

FIG 3 Conversion Factors

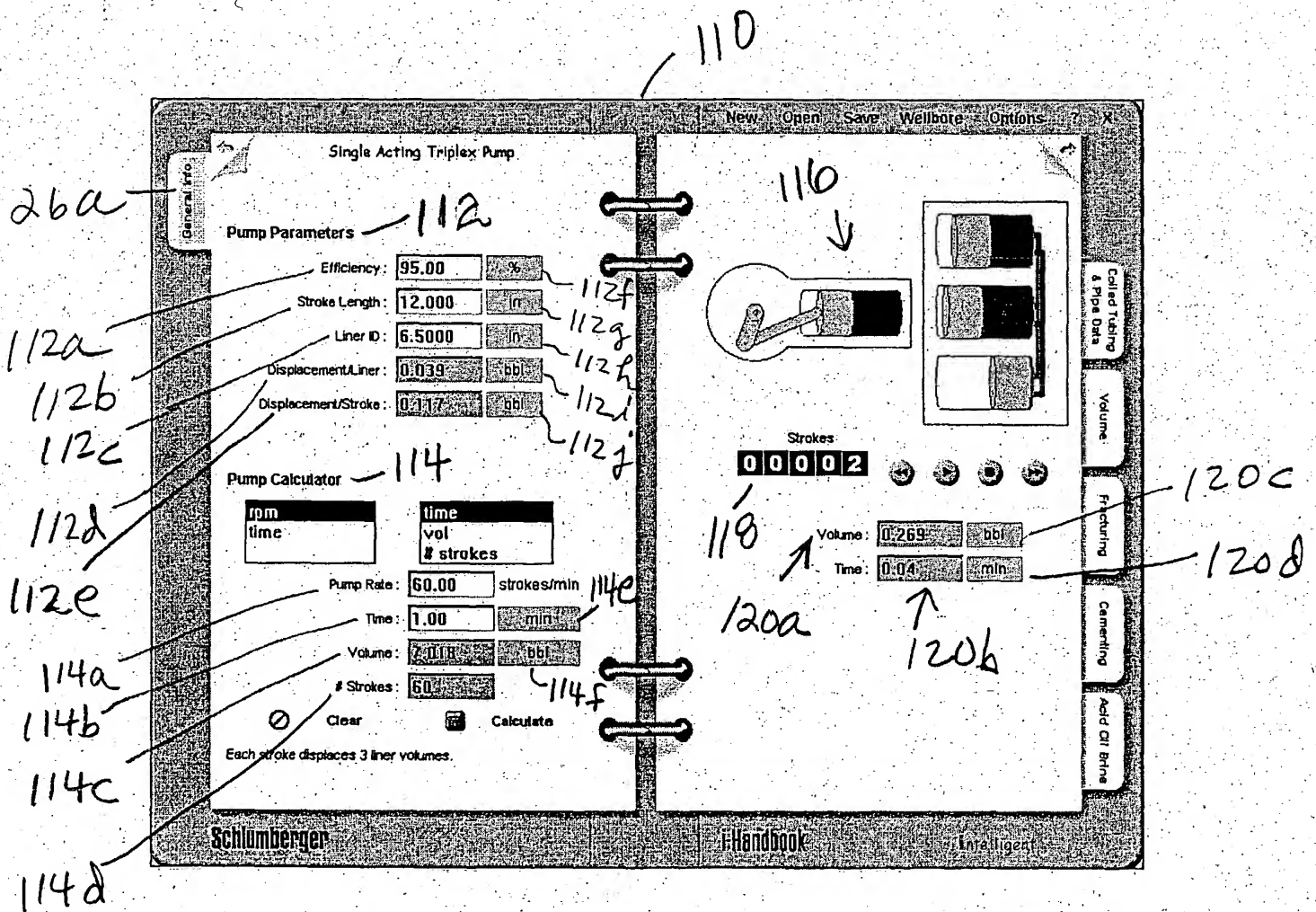


FIG 4 Computing volumes for Single Acting Triplex Pumps

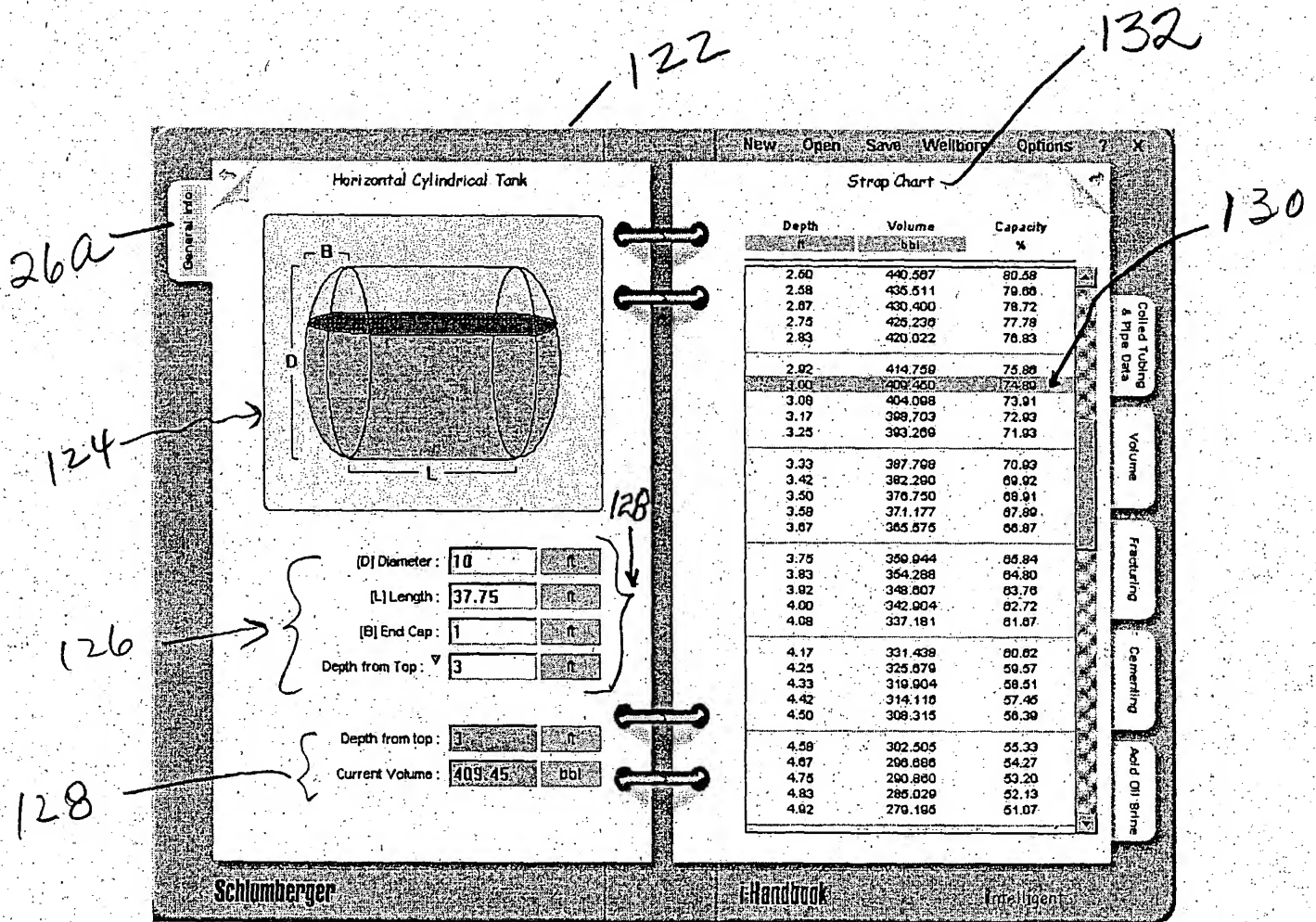


FIG 5 Computing Tank volumes and generating tank straps

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26a

26b

Physical Properties of Casings based on Vendor Supplied Data

Delmine S.p.A.

Antares OD: 7 - 24.5

Joint Type: Coupled;
For more details contact the vendors directly.

OD	Weight	ID	Grade	Wall Thickness
In	lbm/ft	In		In
7.000	20.00	6.466	K-55	0.272
7.000	20.00	6.466	K-55	0.272
7.000	20.00	6.466	L-80	0.272

Physical Properties of Casings based on Vendor Supplied Data

Pipe Body - Calculated Data †

Internal Yield	Collapse Resistance	Tensile Yield	Joint Strength	Regular Coupling OD
psi	psi	lbm	lbm	In
3740	2270	318195	373190	7.857
3740	2270	318195	460502	7.857
5440	2738	450910	507679	7.857

Search Vendor Supplied Casings

OD: 7.000 In Weight: 20.00 lbm/ft Grade: J-55 Find:

Supplier	Brand	OD	Weight	Grade
		In	lbm/ft	
Delmine S.p.A.	Antares	7.000	20.00	J-55
Delmine S.p.A.	Antares MS	7.000	20.00	J-55
Delmine S.p.A.	Antares MS28	7.000	20.00	J-55
Grant Brindco	Atlas Bradford S.L.	7.000	20.00	J-55
Hydri	Saier 500 Type 524	7.000	20.00	J-55
Kawasaki HDS	EOXN	7.000	20.00	J-55
VAM Group	VAM PRO	7.000	20.00	J-55

Please note that when using OD and/or weight, the search engine will return the casings with the closest match to the entered values. E.g. entering OD of 177.7 mm returns 177.799 mm ODs.

Done

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FIG 6 Displaying Tubular Data based on supplier and ability to search through the database.

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140a

140

140b

26a

26b

Tubular Stretch Calculator

Tubular Type: Drill Pipe

OD	Weight	ID	Length	Stretch
in	lbm/ft	in	ft	Oilfield
5.000	16.25	4.408	10000	0.09144
			0	
			0	
			0	
			10000	

Oilfield = in x 1000 lbm x 1000 ft & Metric = cm/km

Pull: 30000 lbm

Young's Mod. for Steel: 3e+007 psi

Effective Stretch: 27.4 in

Free Point Calculator

Tubular Type: Drill Pipe

OD: 5.000 in

Weight: 16.25 lbm/ft

ID: 4.408 in

Total Stretch: 27.434 in

Pull: 30000 lbm

Young's Modulus for Steel: 3e+007 psi

Free Point Constant: 10935.7

Free Point is Located at: 10000.3 ft

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FIG 7 Calculation of Tubular stretch and free point.

New Open Save Wellbore Options ? X

General Info

Coiled Tubing
& Pipe Data

Volume

Dimensions and Capacities
of Tubing

		Displacement					
OD	Weight	ID	Capacity	Open	Plugged		
in	lbm/ft	in	bbt/ft	bbt/ft	bbt/ft		
1.050	NU	1.14	0.824	0.00086	0.00041	0.00107	
1.050	U	1.20	0.824	0.00086	0.00041	0.00107	
1.050	U	1.54	0.742	0.00053	0.00053	0.00107	
1.315	NU	1.70	1.049	0.00106	0.00061	0.00188	
1.315	I	1.72	1.049	0.00106	0.00061	0.00188	
1.315	U	1.80	1.049	0.00106	0.00061	0.00188	
1.315	U	2.24	0.957	0.00089	0.00079	0.00188	
1.680	I	2.10	1.410	0.00193	0.00074	0.00287	
1.680	NU	2.30	1.380	0.00185	0.00082	0.00287	
1.680	I	2.33	1.380	0.00185	0.00082	0.00287	
1.680	U	2.40	1.380	0.00185	0.00082	0.00287	
1.680	U	3.07	1.278	0.00158	0.00109	0.00287	
1.900	I	2.40	1.650	0.00264	0.00086	0.00350	
1.900	NU	2.75	1.610	0.00251	0.00098	0.00350	
1.900	I	2.76	1.610	0.00251	0.00098	0.00350	
1.900	U	2.90	1.610	0.00251	0.00098	0.00350	
1.900	U	3.73	1.500	0.00218	0.00132	0.00350	
1.900	NU	4.42	1.400	0.00190	0.00160	0.00350	
1.900	NU	5.15	1.300	0.00164	0.00186	0.00350	
2.063	I	3.25	1.751	0.00297	0.00115	0.00413	
2.063	NU	4.50	1.613	0.00252	0.00180	0.00413	
2.375	NU	4.00	2.041	0.00404	0.00143	0.00547	
2.375	NU	4.80	1.995	0.00386	0.00161	0.00547	
2.375	U	4.70	1.995	0.00386	0.00161	0.00547	
2.375	NU	5.80	1.867	0.00338	0.00209	0.00547	

NU = non-Upset, U = Upset, I = Integral

Dimensions and Capacities
of Tubing

		Displacement					
OD	Weight	ID	Capacity	Open	Plugged		
in	lbm/ft	in	bbt/ft	bbt/ft	bbt/ft		
2.375	U	5.95	1.867	0.00338	0.00209	0.00547	
2.375	NU	6.80	1.785	0.00309	0.00239	0.00547	
2.375	NU	7.35	1.703	0.00281	0.00286	0.00547	
2.375	U	7.46	1.703	0.00281	0.00286	0.00547	
2.875	NU	8.40	2.441	0.00578	0.00224	0.00802	
2.875	U	8.50	2.441	0.00578	0.00224	0.00802	
2.875	NU	7.80	2.323	0.00524	0.00278	0.00802	
2.875	U	7.90	2.323	0.00524	0.00278	0.00802	
2.875	NU	8.60	2.259	0.00495	0.00307	0.00802	
2.875	U	8.70	2.259	0.00495	0.00307	0.00802	
2.875	NU	9.35	2.195	0.00468	0.00334	0.00802	
2.875	U	9.46	2.195	0.00468	0.00334	0.00802	
2.875	NU	10.50	2.081	0.00424	0.00378	0.00802	
2.875	NU	11.50	1.995	0.00386	0.00416	0.00802	
3.500	NU	7.70	3.088	0.00914	0.00275	0.01190	
3.500	NU	9.20	2.992	0.00889	0.00320	0.01190	
3.500	U	9.30	2.992	0.00889	0.00320	0.01190	
3.500	NU	10.20	2.922	0.00829	0.00360	0.01190	
3.500	NU	12.70	2.750	0.00734	0.00465	0.01190	
3.500	U	12.95	2.750	0.00734	0.00465	0.01190	
3.500	NU	14.30	2.640	0.00677	0.00513	0.01190	
3.500	NU	15.50	2.548	0.00630	0.00559	0.01190	
3.500	NU	17.00	2.440	0.00578	0.00611	0.01190	
4.000	NU	9.50	3.548	0.01222	0.00331	0.01554	
4.000	U	11.00	3.478	0.01173	0.00360	0.01554	

Fracturing

Cementing

Acid Oil Brine

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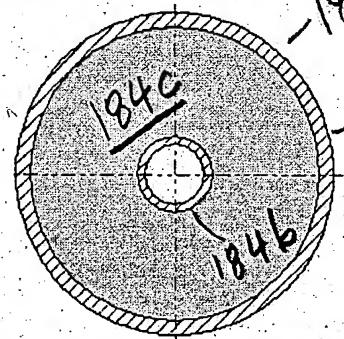
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FIG 8 Tubular Capacities and Displacement Volumes

182a 182 182b

Annular Volume Calculator

Cross Section



Outer (186, 181)

Casing

OD: 4.500 in

Weight: 9.50 lbm/ft

ID: 4.090 in

Inner (188)

Tubing

OD: 1.050 in

Weight: 1.14 lbm/ft

ID: 0.824 in

Calculated Results

Volume for Unit Length

Annular: 0.015179 bbl/ft

Tubular: 0.000659 bbl/ft

Metal Displacement of Outer

Open: 0.003421 bbl/ft

Plugged: 0.019671 bbl/ft

Metal Displacement of Inner

Open: 0.000411 bbl/ft

Plugged: 0.001071 bbl/ft

Volume for Given Depth

196a Depth: 1000 ft

196b Annular: 15.1791 bbl

Tubular: 0.659575 bbl

Depth for Given Volume

198a Volume: 5 bbl

198b Annular: 329.4 ft

Tubular: 7580.63 ft

194 192 190
196 194
198 196

Fracturing
Cementing
Acid Oil Brine

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FIG 9 Annulus Volume Calculations

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26a General Info

26b Coiled Tubing & Pipe Data

26c Volume

26d Fracturing

Slurry Density Tables

Proppant is added to the base gel while carrying out the majority of hydraulic fracturing jobs or during placement of sand plugs. With the addition of proppant, the fluid is termed as a slurry and its physical properties like density, yield, etc. largely depend on the specific gravity of the base gel and the proppant itself.

PPA denotes the concentration of proppant in the slurry in Oilfield units. It depicts the amount of proppant in pounds, added to one gallon of clean fluid.

kgPA denotes the concentration of proppant in the slurry in Metric units. It stands for amount of proppant in kilograms added to one cubic meter of clean fluid.

Clean Fluid Ratio (CFR) denotes the fraction of clean fluid in a unit volume of slurry. Slurry Yield is the reciprocal of CFR and denotes the factor by which the slurry volume increases when proppant is added to clean fluid.

Proppant Specific Gravity:

Select Proppant Type:

Name	Mesh Size	Grain Dia. in.	S.G.
20/40 CarboLite®	20/40	0.028	2.73
16/20 CarboLite®	16/20	0.037	2.73
20/40 NapLite®	20/40	0.028	2.80
16/20 NapLite®	16/20	0.037	2.80
12/18 NapLite®	12/18	0.053	2.80
12/18 CarboLite®	12/18	0.051	2.73

Density of Base Fluid: lbm/galUS

Slurry Density Tables

Prop. Conc. Clean	CFR	Prop. Conc. Slurry	Density of Slurry	Hydrostatic Gradient
PBA	CFR	PPA	lbm/galUS	ps/ft
0.00	1.00	0.00	8.33	0.433
0.50	0.98	0.49	8.63	0.448
1.00	0.96	0.96	8.92	0.463
1.50	0.94	1.40	9.19	0.478
2.00	0.92	1.83	9.46	0.491
2.50	0.90	2.24	9.71	0.504
3.00	0.88	2.64	9.95	0.517
3.50	0.86	3.01	10.18	0.529
4.00	0.84	3.38	10.41	0.541
4.50	0.83	3.73	10.62	0.552
5.00	0.81	4.08	10.83	0.563
5.50	0.80	4.39	11.03	0.573
6.00	0.78	4.70	11.22	0.583
6.50	0.77	5.00	11.41	0.593
7.00	0.76	5.29	11.59	0.602
7.50	0.74	5.57	11.76	0.611
8.00	0.73	5.84	11.93	0.619
8.50	0.72	6.10	12.09	0.628
9.00	0.71	6.36	12.24	0.636
9.50	0.70	6.60	12.39	0.644
10.00	0.68	6.84	12.54	0.651
10.50	0.67	7.07	12.68	0.659
11.00	0.66	7.29	12.82	0.666
11.50	0.65	7.51	12.95	0.673
12.00	0.64	7.72	13.08	0.680
12.50	0.63	7.93	13.21	0.686
13.00	0.62	8.12	13.33	0.692
13.50	0.62	8.32	13.45	0.699

Cementing

Acid Oil Brine

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FIG 10 Slurry Density Calculations

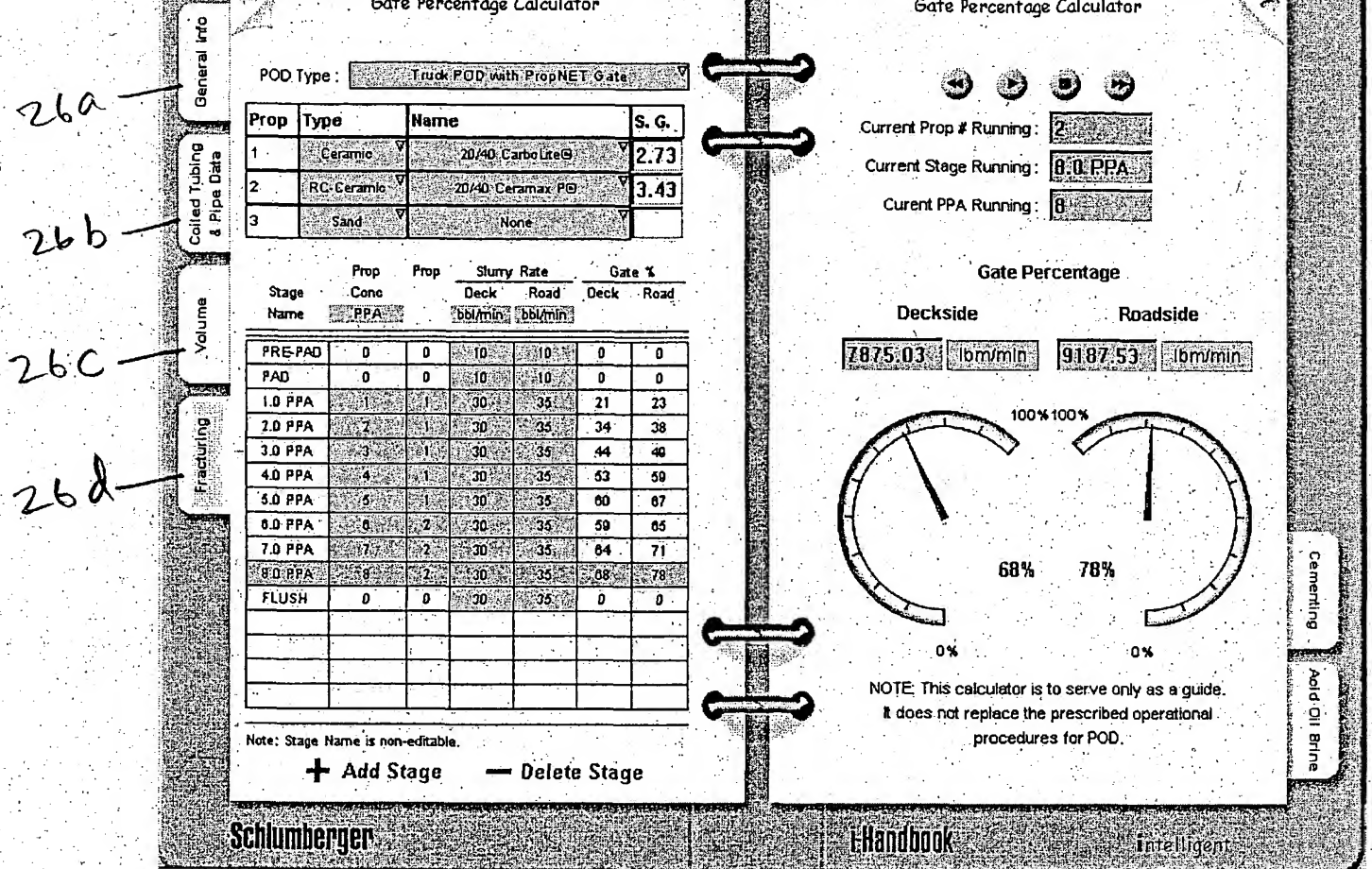


FIG 11 Generating Gate% Charts for a given pump schedule

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26a

26b

26c

26d

General Info
Coiled Tubing & Pipe Data
Volume
Fracturing

Screen Out Calculations

Proppant Type: Sand
Proppant: 20/40 Jordan-Unimin
Specific Gravity: 2.65

Wellbore Volume to Perfs: 144.5 bbl
Surface Line Volume: 5 bbl
Displacement To Perfs: 149.5 bbl

Proppant Designed for Job: 45000 lbm
Volume Flushed [1]: 55 bbl
Surface Prop Counter: 40000 lbm

[1] Flush volume should include surface line volume.
Entered value should be less than displacement to perfs.

Proppant Schedule Type:
☒ Step
☐ RAMPFRAC

Proppant Conc	Slurry Volume
PPA	bbl
4	29.5
6	55
8	10
Total:	94.5

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New Open Save Wellbore Options ? X

Screen Out Calculations

Results

Slurry in Well: 94.5 bbl
Prop in Well: 17559.8 lbm
Prop in Surface Line: 0 lbm
Prop Placed: 22440.2 lbm
% Placed: 49.9
Prop Remaining [2]: 5000 lbm

[2] Proppant remaining on surface; this excludes the amount left in the Surface Line.

Expected Top of Proppant while tagging [3]

☒ Use Tubular I.D. 4.000 in
☐ Use Tubular Capacity 0.015542 bbl/ft

Wellbore Volume Flushed: 50 bbl
Expected Top Of Proppant: 3216.92 ft

[3] Calculation assumes that apart from the volume successfully flushed, the remainder of the well is filled up with proppant.

Cementing
Acid Oil Brine

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FIG 12 Screen out calculations

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26a

26b

26c

26d

26e

Cement Slurry Calculations

System Name: **Lead**

Required Slurry Volume: **936.512** **ft3**

Required Slurry Density: **14.5** **lbm/galUS**

Water Density: **8.32003** **lbm/galUS**

Surface Temperature: **68** **degF**

Custom Blend Name: **New**

Step I: Select Calc Mode & Construct Blend

☐ Mass % Sack Property:

☒ Abs Vol % **Mass** **84** **lbm**

☐ Mass/Sk

Code	Function	Abs Vol. Effective %	Density lbm/ft3
G	Neat Cement	85.0	154.76
0035	Extender	35.0	154.82
None			
None			
None			
None			
None			

Custom Cement & Additives

Step II: Select Dry Blend **New**

Dry Blend	Density lbm/ft3	Sk Wt lbm	Abs Vol galUS	Mass Cement
Custom Blend	184.04	84	3.414	100.0%

Step III: Select Cement Additives

Code	Function	Conc	Unit	Design	Density lbm/ft3
D146A	Dispersant	0.046	galUS/sk	Vol/Sk W	77.41
D081	Retarder	0.200	galUS/sk	Vol/Sk W	78.85
D300	Fluid Loss	0.800	galUS/sk	Vol/Sk W	82.42
D075	Extender	0.500	galUS/sk	Vol/Sk W	88.15
D047	Antifoam	0.050	galUS/sk	Vol/Sk W	82.17
D044	Accelerator	4.000	%	%BWOW D	134.84
None					
None					
None					
None					

W = Wet, D = Dry

Results: Cement Slurry Properties

Slurry Yield: **1.27165** **ft3/sk**

Base Fluid: **4.45007** **galUS/sk**

Mix Water: **4.50287** **galUS/sk**

Mix Fluid: **6.09707** **galUS/sk**

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FIG 13 Cement Slurry Calculations showing the property of blended cement

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New Open Save Wellbore Options ? X

26a General Info

26b Coiled Tubing & Pipe Data

26c Volume

26d Fracturing

26e Cementing

Cement Slurry Calculations

Results: Blend Totals

Code	Material Name	Qty/Sk		Total Quantity	
		lbm	galUS	lbm	galUS
G	Neat Cement	59.2	2.219	43647	-
D035	Extender	24.7	1.194	18214	-
Totals:		84.0	3.414	61862	0.00

Results: Additive Totals

Code	Material Name	Qty/Sk		Total Quantity	
		lbm	galUS	lbm	galUS
D145A	Dispersant	0.46	0.04	342	33.14
D081	Retarder	2.10	0.20	1548	147.29
D300	Fluid Loss	6.67	0.80	4917	589.16
D075	Extender	5.75	0.50	4241	368.23
D047	Antifoam	0.41	0.05	306	36.82
D044	Accelerator	1.48		1090	

Results: Water Needed 3316.15 galUS

Results: Bulk Volumes

Dry Blend Only: 1.00 ft3/sk

Dry Blend + Solid Additives: 1.02 ft3/sk

Administrative Details

Location: Schlumberger - Sugar Land, TX

Job Date:

Customer

Name:

Number:

Well Name:

Quote Number:

Job Type:

System Description:

465 sks G + 166 sks D035 + 0.045 galUS/sk D145A + 0.200 galUS/sk D081 + 0.800 galUS/sk D300 + 0.500 galUS/sk D075 + 0.050 galUS/sk D047 + 4.000 % D044

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FIG 14 Bulk Plant loading guide is generated based on the user inputs

New Open Save Wellbore Options ? X

Casing Lift Calculations

Tubular Type

Casing

OD: 13.375 in

Weight: 61.00 lbm/ft

ID: 12.515 in

Tubular Setting Depth (MD): 3500 ft

Tubular Setting Depth (TVD): 3500 ft

Annulus:

Fluid Depths at the End of Job

Fluid Type	Top	Bottom	Density	Hydrostatic Pressure
	TVD	TVD		
Drilling Mud	0	1000	12.5	850.0
Spacer	1000	1200	12.5	130.0
Lead	1200	2400	13.0	811.2
Tail	2400	3500	10.4	938.0
None				
None				
None				

Tubular:

Displacing Fluid Density: 12.5 lbm/galUS

Casing Lift Calculations

Static Conditions

Tubular Weight in Air: 213500 lbm

Weight of Fluid in Tubular: 279855 lbm

Total Downward Force: 493355 lbm

Well Hydrostatic Force: 355365 lbm

Static Lifting Force: 137990 lbm

Tubular will not be lifted by hydrostatics alone.

While Pumping

Pressure to Land Plug: 254.28 psi

Additional Force: 31279.8 lbm

Total Force: 106710 lbm

Tubular will not be lifted while pumping.

Critical Surface Pressure: 1121.75 psi

Note: Any surface pressure that is greater than the critical surface pressure calculated above, will lift the tubular. Friction pressures are not included in the calculation.

Acid Oil Brine

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FIG 15 Casing Lift calculations

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26a General Info

26b Coiled Tubing & Pipe Data

26c Volume

26d Fracturing

26e Cementing

26f Acid Oil Brine

HCl Density Calculator & Table

HCl Concentration: %

Specific Gravity:

Density: lbm/galUS

% HCl	Specific Gravity	Degrees Baume	Density lbm/galUS	Hydrostatic Gradient psi/ft
17	1.0847	11.3	9.030	0.4699
18	1.0898	11.9	9.079	0.4720
19	1.0948	12.6	9.120	0.4742
20	1.0998	13.2	9.162	0.4764
21	1.1049	13.8	9.204	0.4786
22	1.1099	14.4	9.246	0.4808
23	1.1150	14.9	9.288	0.4830
24	1.1200	15.5	9.330	0.4851
25	1.1250	16.1	9.372	0.4873
26	1.1301	16.7	9.414	0.4895
27	1.1351	17.3	9.456	0.4917
28	1.1402	17.8	9.498	0.4939
29	1.1452	18.4	9.540	0.4961
30	1.1503	18.9	9.582	0.4983
31	1.1553	19.5	9.624	0.5004
32	1.1604	20.0	9.666	0.5026
33	1.1654	20.6	9.708	0.5048
34	1.1705	21.1	9.750	0.5070
35	1.1756	21.7	9.792	0.5092
36	1.1806	22.2	9.835	0.5114
37	1.1857	22.7	9.877	0.5136
38	1.1907	23.2	9.919	0.5158

HCl Dilution Calculator & Table

Initial Concentration: %

Desired Concentration: %

Desired Vol: galUS

Initial Density: lbm/galUS

Final Density: lbm/galUS

Volume of Strong: galUS

Volume of Water: galUS

Desired Volume galUS	Percent Strong HCl - %				
	15	16	17	18	19
500	500.0	468.5	437.0	410.8	387.4
1000	1000.0	933.1	874.1	821.7	774.9
1500	1500.0	1399.7	1311.2	1232.6	1162.4
2000	2000.0	1866.2	1748.3	1643.5	1549.9
2500	2500.0	2332.8	2185.4	2054.4	1937.4
3000	3000.0	2799.4	2622.5	2465.3	2324.8
3500	3500.0	3265.9	3059.5	2876.2	2712.3
4000	4000.0	3732.5	3496.6	3287.1	3099.8
4500	4500.0	4199.1	3933.7	3698.0	3487.3
5000	5000.0	4665.6	4370.8	4108.9	3874.8
5500	5500.0	5132.2	4807.9	4519.8	4262.2
6000	6000.0	5598.8	5245.0	4930.7	4649.7
6500	6500.0	6065.3	5682.1	5341.6	5037.2

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FIG 16 Calculations showing density and dilution for Hydrochloric acid

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Oil Gravity & API Calculator

Specific Gravity = $\frac{141.5}{dAPI + 131.5}$

$dAPI = \frac{141.5}{\text{Specific Gravity}} - 131.5$

Specific Gravity:

API Gravity:

Oil Gravity & API Table

API Gravity dAPI	Specific Gravity	Density lbm/gal US	Hydrostatic Gradient psf/ft
10	1.0000	8.337	0.4335
11	0.9930	8.278	0.4305
12	0.9861	8.221	0.4275
13	0.9792	8.164	0.4245
14	0.9725	8.108	0.4216
15	0.9659	8.052	0.4187
16	0.9593	7.998	0.4159
17	0.9529	7.944	0.4131
18	0.9465	7.891	0.4103
19	0.9402	7.838	0.4076
20	0.9340	7.787	0.4049
21	0.9279	7.736	0.4022
22	0.9218	7.685	0.3996
23	0.9159	7.635	0.3970
24	0.9100	7.586	0.3945
25	0.9042	7.538	0.3920
26	0.8984	7.490	0.3895
27	0.8927	7.443	0.3870
28	0.8871	7.396	0.3846
29	0.8816	7.350	0.3822
30	0.8762	7.304	0.3798
31	0.8708	7.260	0.3775
32	0.8654	7.215	0.3752
33	0.8602	7.171	0.3729
34	0.8550	7.128	0.3707
35	0.8498	7.085	0.3684
36	0.8448	7.043	0.3662
37	0.8398	7.001	0.3641
38	0.8348	6.960	0.3619

Schlumberger

Handbook

Interactive

FIG 17 Computing API gravity from Specific gravity of oil and vice versa

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Physical Properties of Calcium Chloride Solutions

Sp. Gr. 60degF	Sol. Weight lbm/galUS	Materials per bbl Sol.		Freezing Point degF	Appx % CaCl2
		Peladown (94.97% CaCl2)	Water		
1.007	8.40	3	41.90	31.0	0.438
1.030	8.80	13	41.70	29.0	0.448
1.055	9.80	24	41.50	25.0	0.457
1.079	9.00	35	41.10	21.0	0.467
1.103	9.20	46	40.80	17.0	0.477
1.127	9.40	58	40.40	12.0	0.488
1.151	9.80	70	39.90	6.0	0.498
1.175	9.80	81	39.60	0.0	0.509
1.199	10.00	94	39.10	-8.0	0.519
1.223	10.20	106	38.60	-18.0	0.529
1.247	10.40	118	38.30	-29.0	0.540
1.271	10.80	130	37.80	-43.0	0.550
1.295	10.80	142	37.50	-59.0	0.561
1.319	11.00	154	36.60	-22.0	0.571
1.343	11.20	167	36.30	0.0	0.581
1.367	11.40	180	35.00	27.0	0.592
1.391	11.60	192	35.40	44.0	0.602
1.415	11.80	206	34.70	60.0	0.612
1.439	12.00	221	34.00	70.0	0.623

Salt Requirement Calculator

Salt Type: Calcium Chloride

Calculation Mode:

☒ Solution Density

☐ Percent Concentration

Solution Density: 10.67 lbm/galUS

Percent Concentration: 28.7 %

Desired Solution Volume: 100 bbl

CaCl2 Type: Peladown

Calcium Chloride Req.: 13420 lbm

Water Required: 3769.5 galUS

Hydrostatic Gradient: 0.55385 psi/ft

Freezing Point: -48.6 degF

Salt and water requirements for various concentrations or densities are obtained by interpolating between values provided in the preceding tables. Users are advised to perform adequate tests to ensure proper results.

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FIG 18 Salt interpolating table

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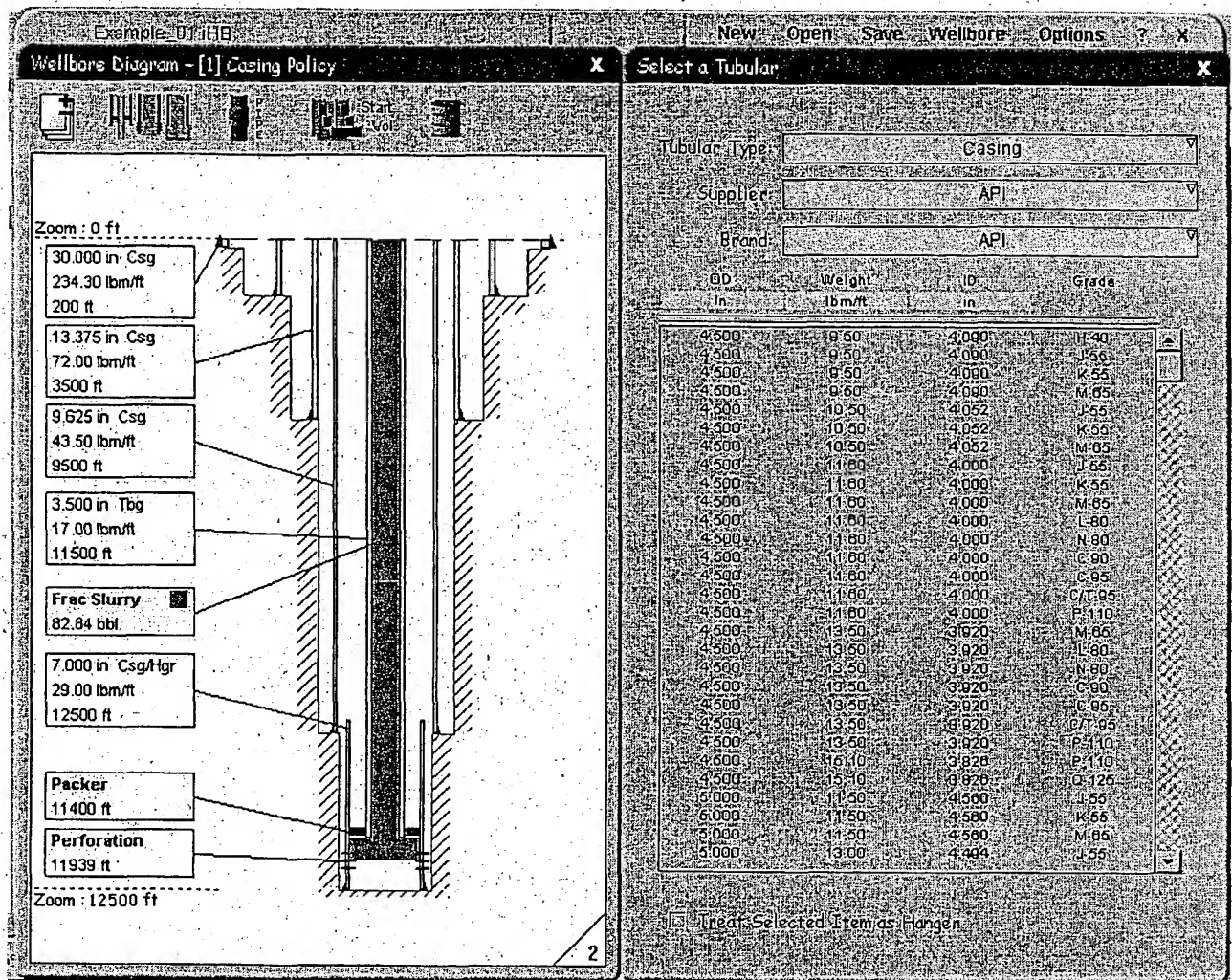
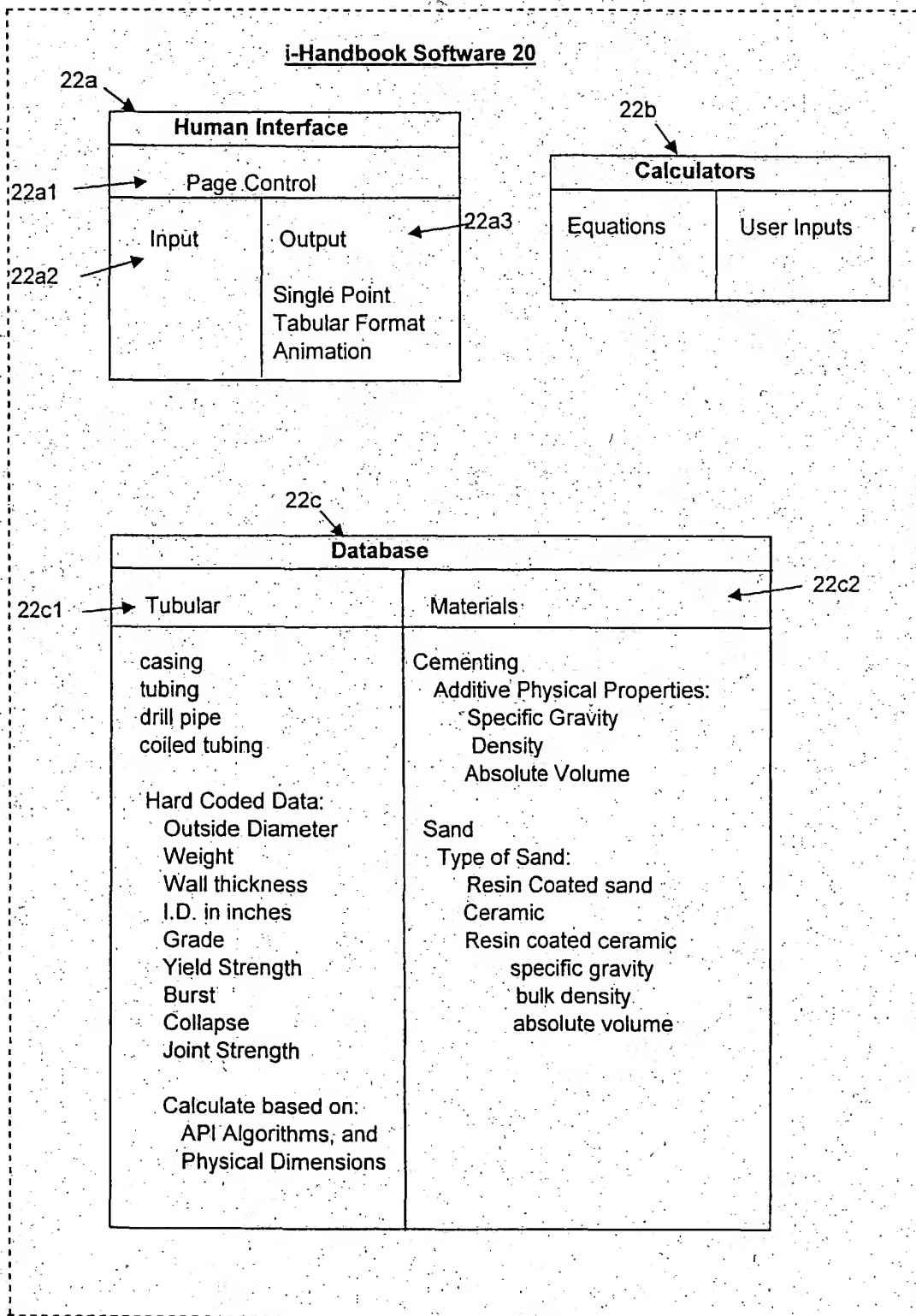


FIG 19 Wellbore Diagram feature

**FIG 20**

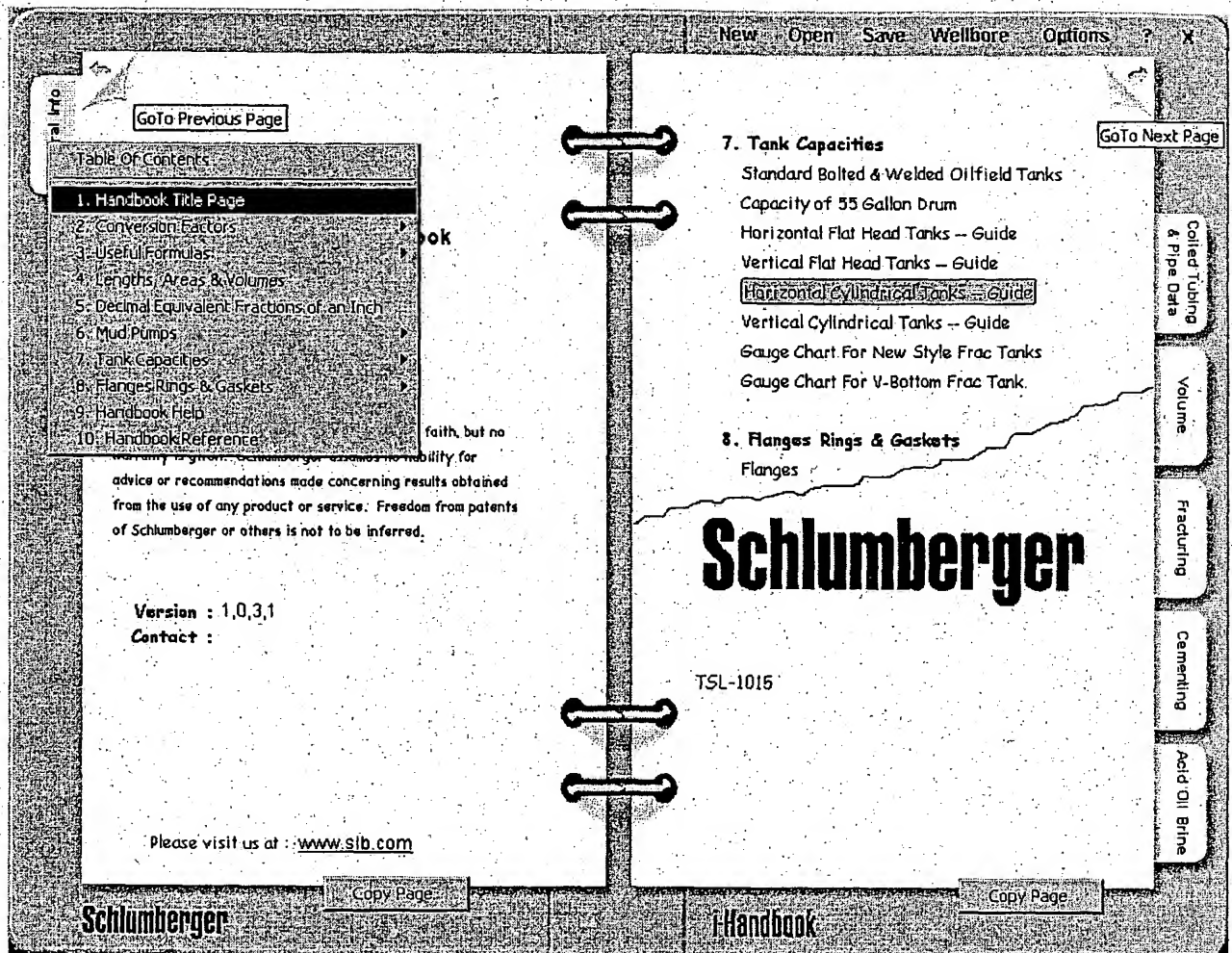


FIG 21 Various features of i-Handbook that pertain to "page control" module.

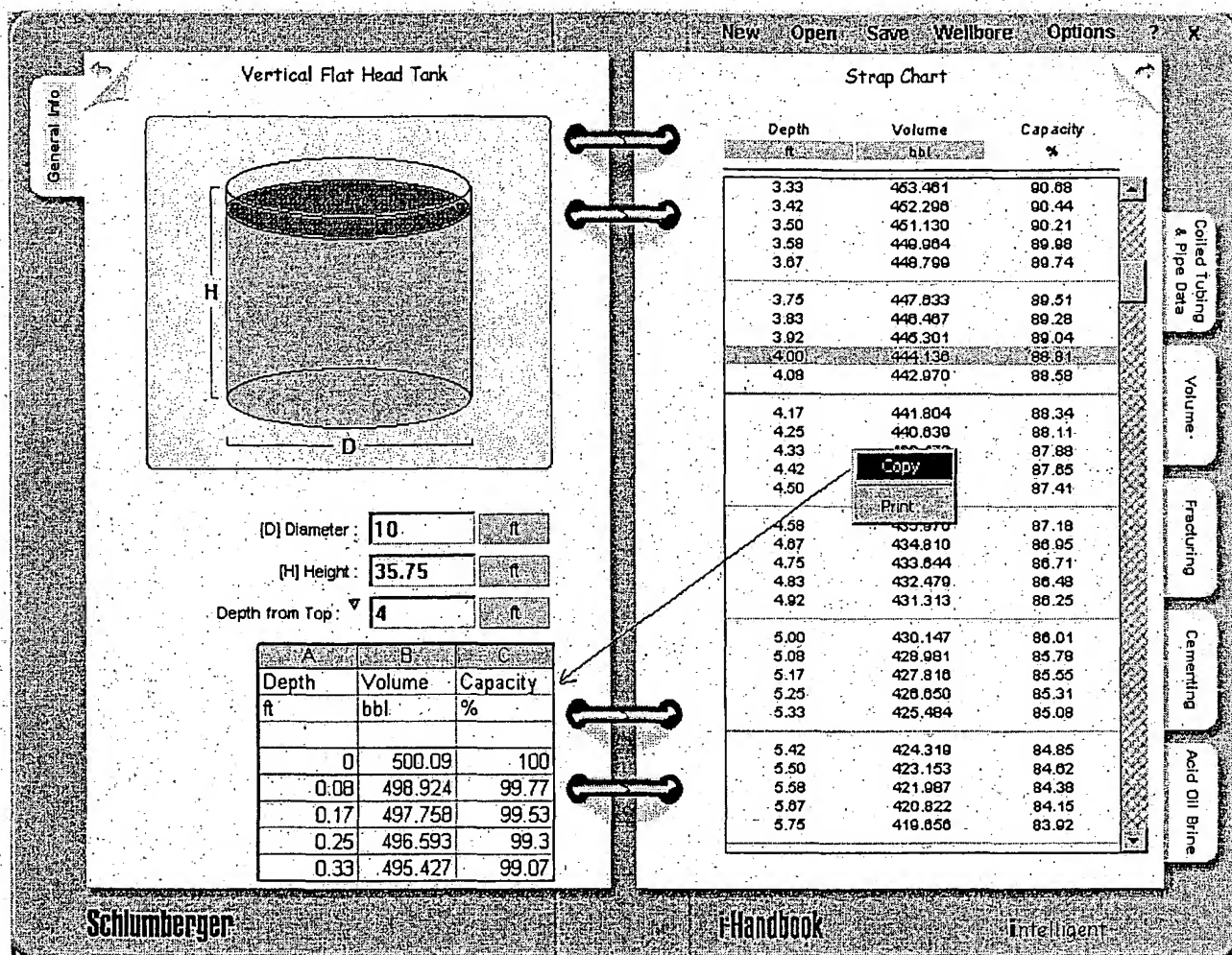


FIG 22 Table Control feature allows proper display of output results and also ability to copy the data and paste it in any cell-based software such that the value in individual cells remains editable.

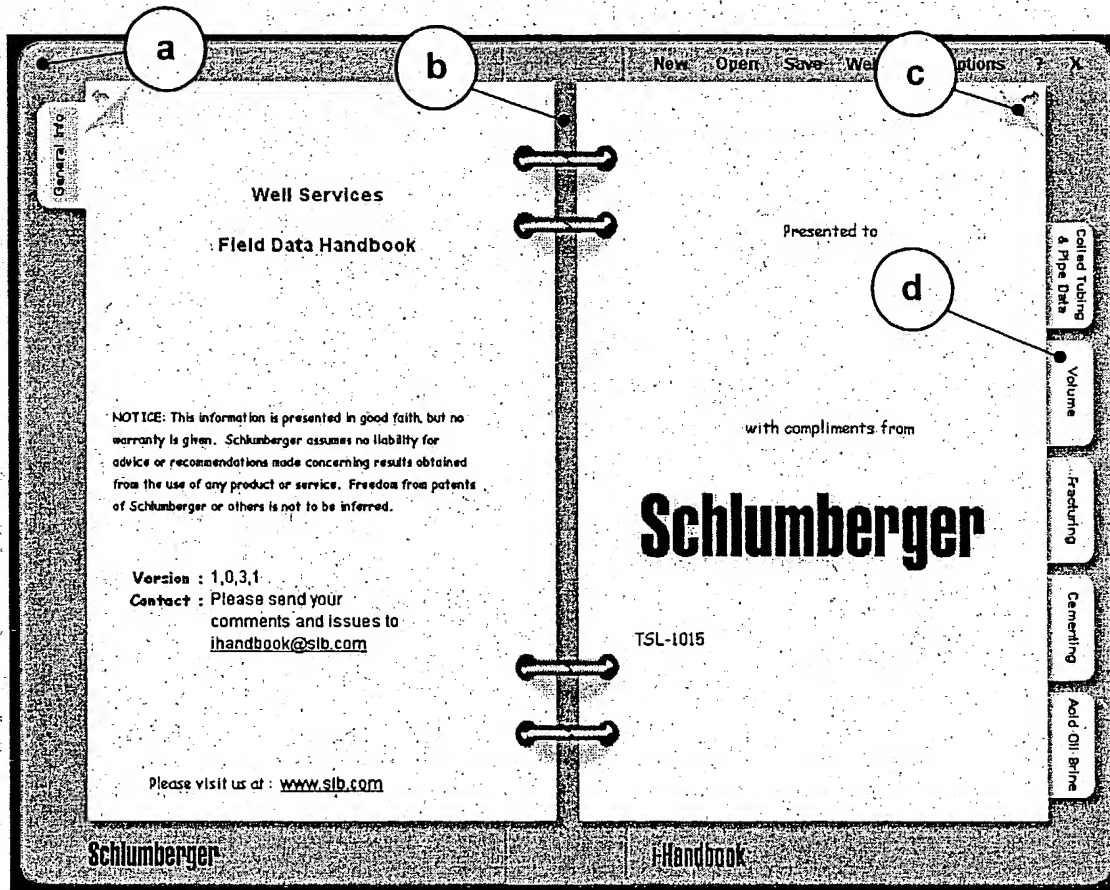


FIG 23 : i-Handbook Application on Windows Desktop.

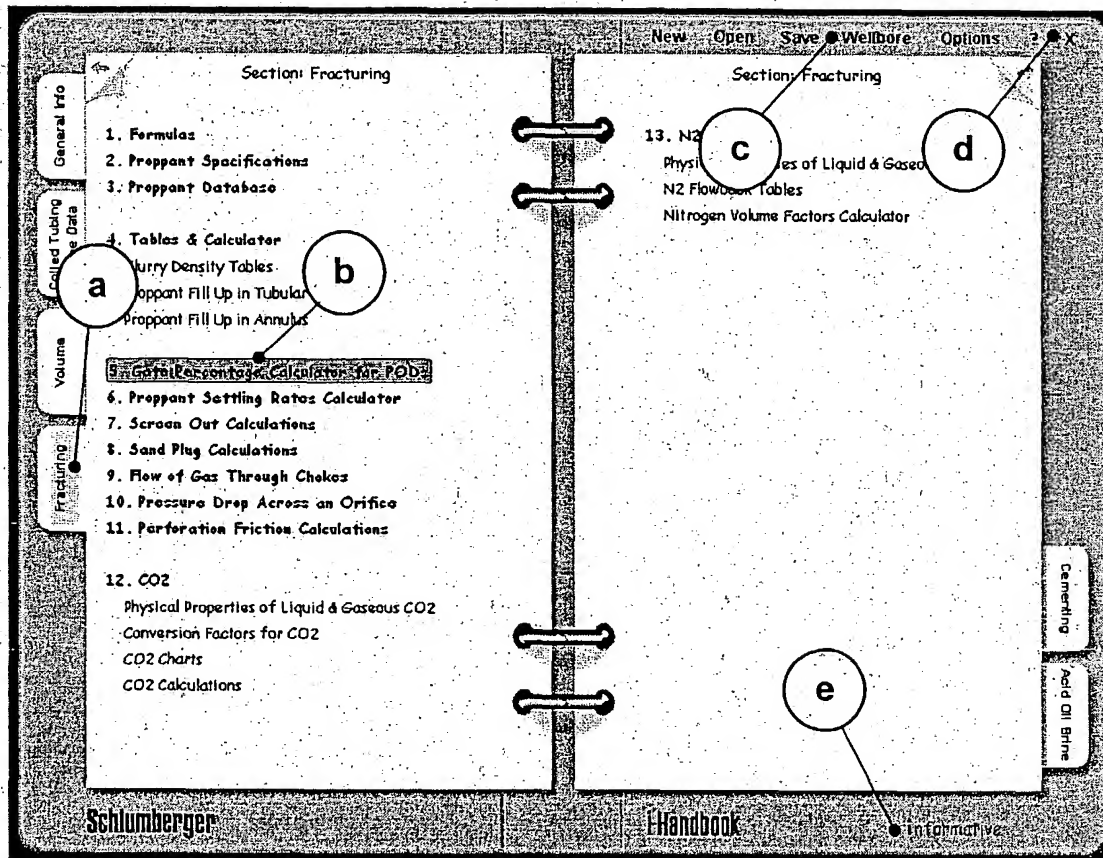


FIG 24 Extended functionality over physical Field Data Handbook

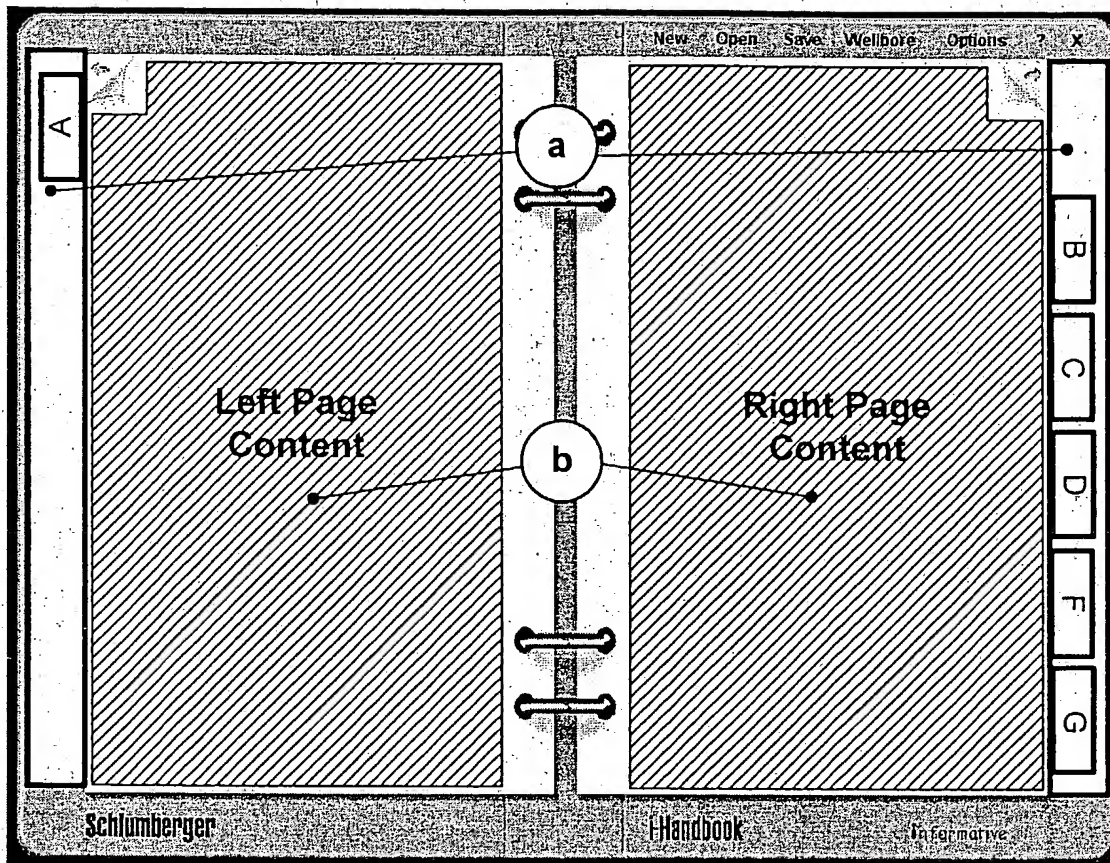


FIG 25 Primary areas of i-Handbook

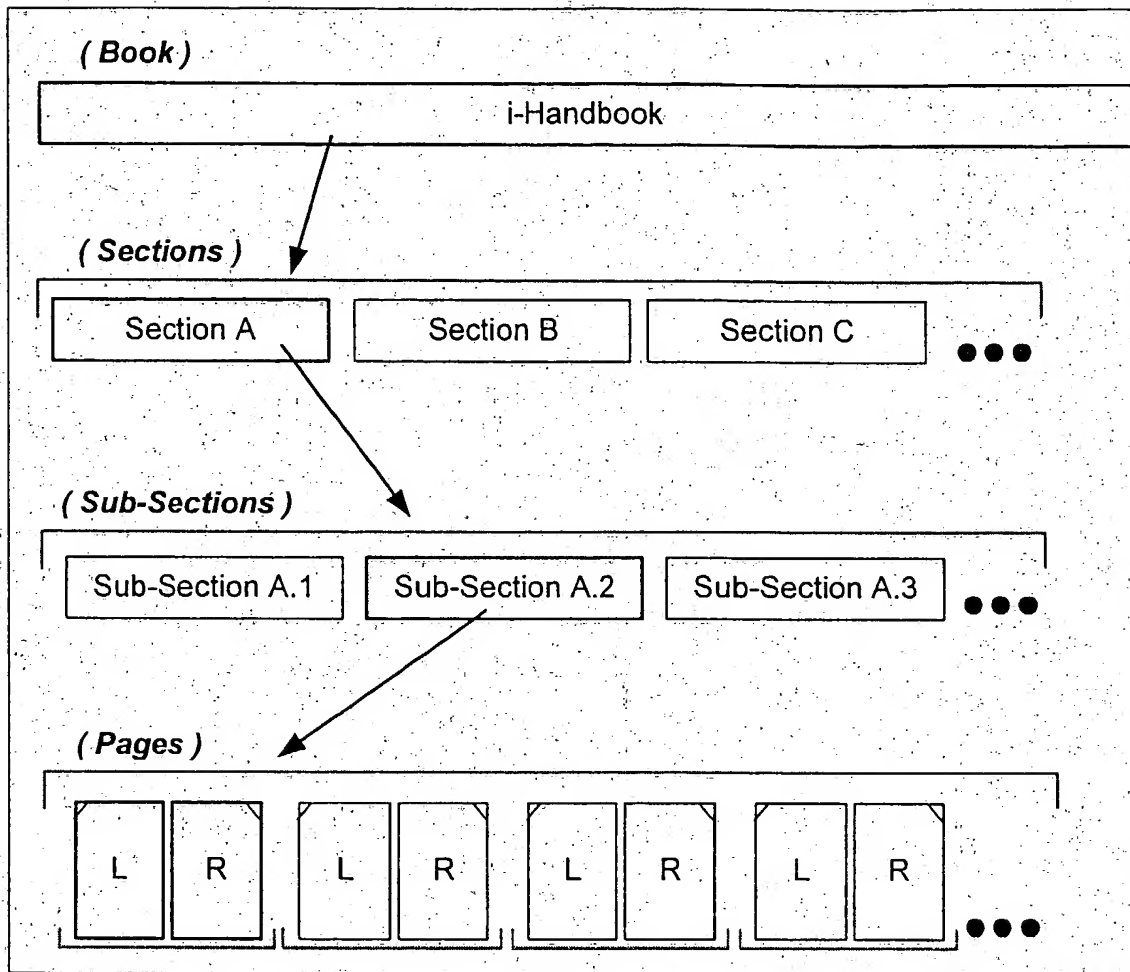


FIG 26 Layers in i-Handbook

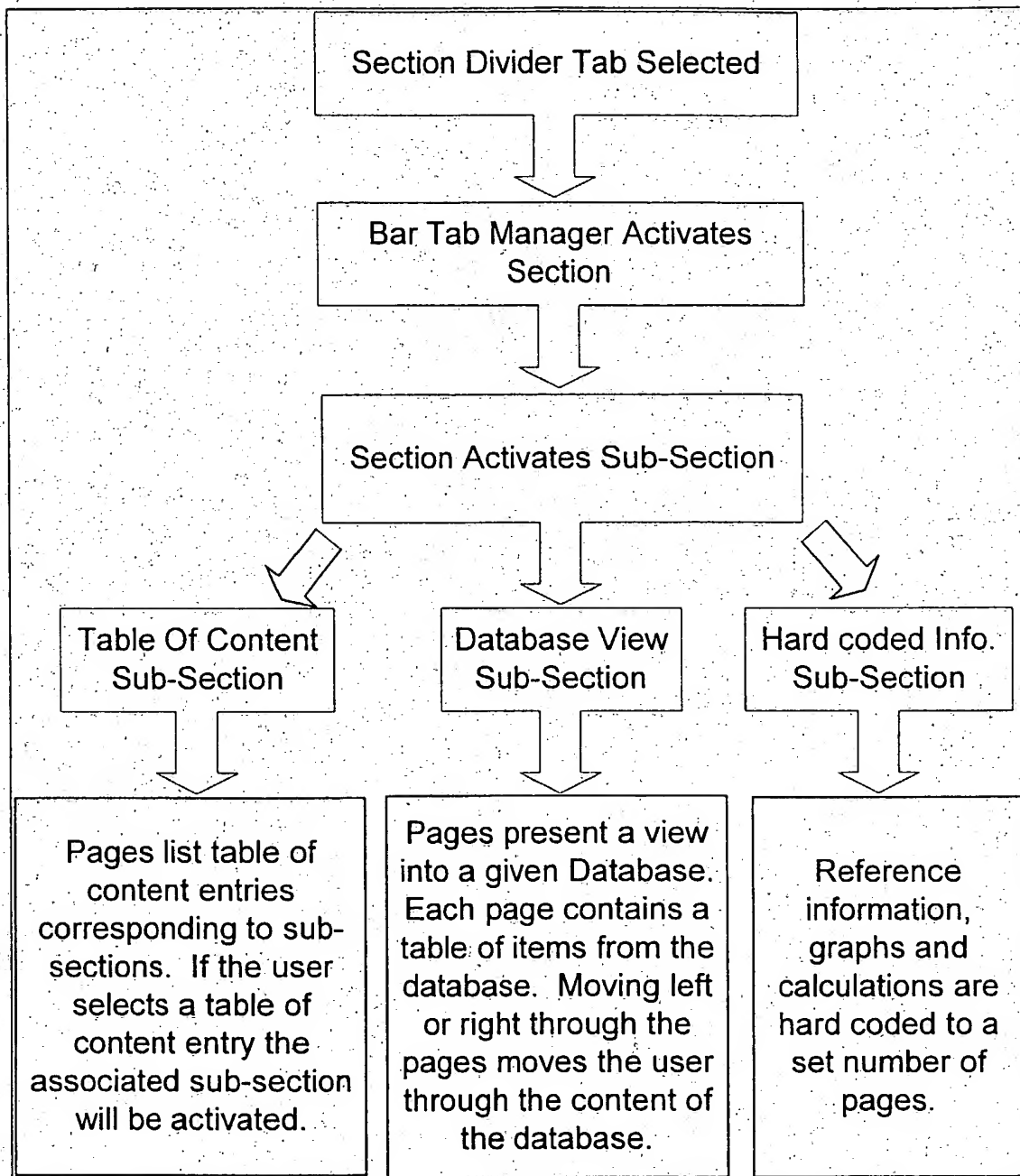


FIG 27 Functional Flow Diagram

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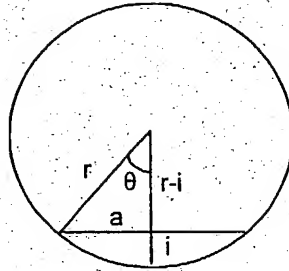


FIG 28

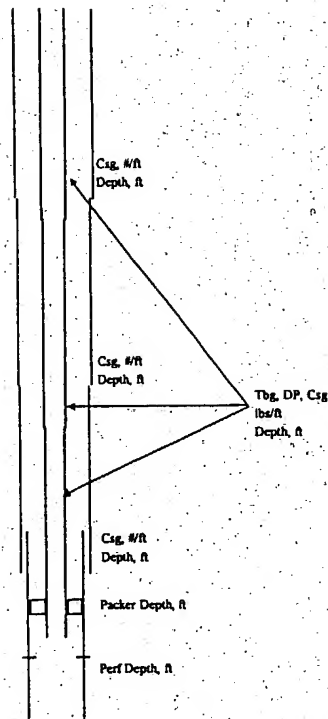


FIG 29